

Notice of Allowability

Application No.

10/521,867

Examiner

Linh T. Nguyen

Applicant(s)

ANDERSEN ET AL.

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 01/21/05.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kato et al (US Publication Number 2004/0042356) discloses a tilt correcting apparatus using the relationship between the pre-pit signal and RF signal.

Wada et al (US Publication Number 2005/0078574) discloses tilt correction according to the substrate thickness of the optical recording medium to vary the tilted of the objective lens.

Sato et al (US Publication Number 2004/0125711) discloses a tilt correction by pre-processing the inner circumference disc data to determine a tilt correction quantity.

Yoshimoto et al (US Publication Number 2003/0161232) discloses a tilt detection apparatus by obtaining the phase difference of 2 signals from the light receiving element.

Kiyoshi et al (JP 2002-342963) discloses a tilt detect device by measuring the amplitude of reproducing signals.

2. Claims 1-21 are allowable over the prior art of record.

In regards to claims 1 and 8, none of the references of record alone or combination disclose or suggest an apparatus and a method in an optical disc drive apparatus, of a type comprising: rotating means defining a rotating axis for an optical disc; optical scanning means for scanning an optical disc with a light beam, said optical

scanning means comprising a displaceable objective lens for focussing the light beam onto said optical disc, said objective lens being displaceable in axial direction and capable of being pivoted about an axis directed in tangential direction; a method for **measuring tilt in a measuring location of the optical disc; the method comprising the steps of: by pivoting and axially displacing the objective lens, bringing said objective lens to a first focus measuring location such as to focus the light beam in a first anchor point having substantially the same angular coordinate Φ as said measuring location and having a small radial distance Δr_1 from said measuring location; by displacing and pivoting the objective lens, bringing said objective lens to a second focus measuring location such as to focus the light beam in a second anchor point having substantially the same angular coordinate Φ as said measuring location and having a small radial distance Δr_2 from said measuring location; said first and second anchor points being located on opposite sides of said measuring location; the method further comprising the step of calculating tilt in said measuring location from the coordinates of said two focus measuring locations of said objective lens.**

In regards to claims 16 and 17 none of the references of record alone or combination disclose or suggest a method in an optical disc drive apparatus, of a type comprising: rotating means defining a rotating axis for an optical disc; optical scanning means for scanning an optical disc with a light beam, said optical scanning means comprising a displaceable objective lens for focusing the light beam onto said optical disc, said objective lens being displaceable in axial direction and capable of being

pivoted about an axis directed in tangential direction; a method for setting an operational pivot angle of the objective lens; the method comprising the steps of: [a] selecting an initial pivot offset; [b] bringing the objective lens to an initial focus position $(x_{sub.0}, 0, z_{sub.0}, \Psi_{sub.0})$; [c] with respect to said initial focus position $(x_{sub.0}, 0, z_{sub.0}, \Psi_{sub.0})$, pivoting the objective lens over a first angle towards smaller radius to a position $(x_{sub.0}, 0, z_{sub.0}, \Psi_{sub.0} - \Delta\Psi_{sub.1})$; [d] displacing the objective lens axially over a first axial distance such that the optical beam is again focused on the disc; [e] with respect to said initial focus position $(x_{sub.0}, 0, z_{sub.0}, \Psi_{sub.0})$, pivoting the objective lens over a second angle towards larger radius to a position $(x_{sub.0}, 0, z_{sub.0}, \Psi_{sub.0} + \Delta\Psi_{sub.2})$, wherein the second angle is equal to said first angle; [f] displacing the objective lens axially over a second axial distance such that the optical beam is again focused on the disc; [g] comparing said first axial distance with said second axial distance; [h1] if said first axial distance is not, within a certain limit, substantially equal to said second axial distance, readjust the pivot offset and repeat steps [b]-[g]; [h2] if said first axial distance is substantially equal to said second axial distance, set the operational pivot angle of the objective lens on the basis of the current value of the pivot offset.

In regards to claims 20 and 21 none of the references of record alone or combination disclose or suggest Optical disc drive apparatus, comprising: rotating means defining a rotating axis for an optical disc; optical scanning means for scanning an optical disc with a light beam, said optical scanning means comprising: a light beam

generating means for generating a light beam; a displaceable objective lens for focusing the light beam onto said optical disc; the apparatus further comprising: radial actuator means for radially displacing said objective lens; axial actuator means for axially displacing said objective lens; pivot actuator means for pivoting said objective lens; control means for controlling said radial actuator means, said axial actuator means, and said pivot actuator means; said control means being designed for setting an operational pivot angle of the objective lens by: **[a] selecting an initial pivot offset; [b] activating said radial actuator means and said axial actuator means in order to bring the objective lens to an initial focus position $(x_{\text{sub}.0}, 0, z_{\text{sub}.0}, \Psi_{\text{sub}.0})$; [c] activating said pivot actuator means in order to pivot the objective lens over a first pivot angle towards smaller radius to a position $(x_{\text{sub}.0}, 0, z_{\text{sub}.0}, \Psi_{\text{sub}.0} - \Delta\Psi_{\text{sub}.1})$; [d] activating said axial actuator means in order to axially displace the objective lens over a first axial distance such that the optical beam is again focused on the disc; [e] activating said pivot actuator means in order to pivot the objective lens over a second pivot angle towards larger radius to a position $(x_{\text{sub}.0}, 0, z_{\text{sub}.0}, \Psi_{\text{sub}.0} + \Delta\Psi_{\text{sub}.2})$, wherein the second angle is equal to said first angle; [f] activating said axial actuator means in order to axially displace the objective lens over a second axial distance such that the optical beam is again focused on the disc [g] comparing said first axial distance with said second axial distance; [h1] if said first axial distance is not, within a certain limit, substantially equal to said second axial distance, readjust the pivot offset and repeat steps [b]-[g]; [h2] if said first axial distance is substantially equal to said second axial**

distance, set the operational pivot angle of the objective lens on the basis of the current value of the pivot offset.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linh T. Nguyen whose telephone number is 571-272-5513. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
May 4, 2006


ANDREA WELLINGTON
SUPERVISORY PATENT EXAMINER